Notebook, N-91-01-24

This notebook covers the period January 1891-April 1892. It was used by an unidentified experimenter, probably William K. L. Dickson, for notes, drawings, and calculations regarding iron ore separation experiments. Among the samples tested are ores from the Ogden mine, site of Edison's New Jersey and Pennsylvania Concentrating Works, and from the Spurr mine in Humboldt, Michigan. The pages are unnumbered. Approximately 20 pages have been used.

Weldon concentration
at Lampeka Jan. 24

Tailings — Weight grams
Coarse 5.0, 1 dozen 32.500
fines & slimes 7.500

% fines 18.5
% iron in which 8.08

Corn.
Coarse 5 to 1 down 41.5
fines & slimes —, 5.

10% fines

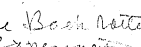
Jan.

Guide Board Matter
Experiments

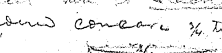
The convex superstitch is a great improvement on straight ~~pretty~~ sides.

but needs occasional attention

Bill found by Eng. chief to be man to stack sides so pound concave 3/4 to —



then changed to 1" - Concave is better all, an improvement on convex but still in order requiring a little attention of foreman, in most constant but attention on riffle box, if block guides were used near the roller as for stacked



Ori

[illegible] Cap,

[illegible] Belt Cuts always to slack side, consequently concave side be better [illegible]

Of gives [illegible] work for belt & finish —

Jan 28/9

2 Small bars received from McCeing

Specimen 40 mesh — then refined concent. 100 — mesh —

			analysis
#1	Stickpile Crude	40 —	59.36
"	" " "	100	64.73
#2	" " "	40 —	57.16
"	" " "	100 —	64.63

Quite hard to sep. fine grain. Slightly in favor of No 2

[illegible]

Feby. 29th 91

Hunter at Ore

magnetite

	1st Test	2nd Test
Con —	69.86	71.69
Tails —	23.89	10.20 lbs
Cap. —	1200	
Crude —		

Tails & Concentrates and reduced to 150 mesh when done 26.78

Concentrate Tails or magnetite pounds 150 mesh = 26.78 lbs

magnetite

40 mesh

Con — 68.78

Tails — 83.1 ~~2.89~~ magnetite pounds

Cap — 1360

Crude — 47.

pounds 150 mesh = 65.58

Tails retested 3.6

Feby. 3. Ogden Ore 40 Mesh

Conc 40 mesh, 70.58

Tails 3.29 + mostly magnetite

Cap 3,060 lbs hour.

Crude -

Conc reduced to 150 mesh disc machine 68.41

Feby. 6. Hunter at Ore 40 mesh

Concs 65.88 run through disc machine (recently done) shows 65.08 at 150 mesh

Cap 1020 lbs. Concs

tails at 150 mesh 23.16

Concs from tailings at 40 mesh reduced to 150 mesh shows 31.80 iron

this shows tailings nearly all magnetite.

(93)

Feby. 6.

Ogden Ore - 40 mesh

Cap 32.50 lbs Crude ore

Concs at 150 mesh 68.30

tails reduced to 150 mesh 0.724 in

Speed belt 520 ft.

Feby. 6.

Ogden Ore 40 mesh Concs

run through second time

show 69.50 iron at 150 mesh

Cap 930 lbs Conc

Speed belt 520 ft

Feby 13/91

Wharliegs attachment

		1 mat. 150 mesh
Ogden ore - Con. 5-mag.	Cap 2000	67.90
" " Tails " " " "		1.62

Speed of Bell 520 - Speed of Whirl. 240

		1 mesh
" " Con 10 magnets	Cap 2000	69.86
Tails " " " "		21.50

Compare Tails reduced to 150 mesh = 44.55

Speed 520 - ~~Whirligig~~ 240

Ogden Ore Con. 16-mag.	Cap 2000	68.48
" " Tails " " " "		1.80

~~Speed 260~~ -

OK.

March 8th 91

Mr Batchelor Brot Some
Con 100 mesh Very dirty analysis
95.5% ox. ide — 4.5% Dirt (impure)

Washed a Sample
filter the Sp. Water Dirt = 5 Diam
Dirt the Con. = 76.

76) 500 (6.5%
440
60

6.5% Dirt found by washing
4.5% " " " magnetic mag
— 2%

2% Gain by washing

Sent Feb 28/91
March 1/91

Perry Butler ore

Chem. Analysis — Iron = 49.50%
Sulphur — not enough to calculate
phosphorus — " " " "
Manganese — .33%
Titanium — — 10.310

Iron Con = 54.13
Sulphur — not enough to cal.
Phos. " " "
Mang. .24%
Titanium 6.5265

Tails
Iron — 24.90
non mag Hematite.

Aylsworth
Chem

Iron Con. from Apr. 15.
Bell machine after Nos

Sent out for analysis.

Known a marked as:-

marked				
#1 = Dx analysis for phos. P.O.P.	30 mesh	ang (all passing thro 30)	64.4 .046 phos	
#2 - Dx	40 "	" "	65.7 .046 phos	" 40
#3 - " x	50 "	" " "	65.9 .045	" 50
" 4 - x	60 "	" " "	66.12 .042	" 60
" 5 - x	70 "	" " "	66.15 .042 phos	

washed exp.
x 11 is same as 9
x Concentrate Washed

Took 30 grams - of the Con - 64.44 phos. after washing = .021 phos
9 opinion original
21 opinion after wash.
= % loss by washing

Extra 3 Samples but for Sulphur Determination -

3 Samples Dred. Canada - all carried Sulph. plainly to be seen before, breaking -
x 1 from a low grade piece that appears where they have worked the vein at rate 210.
x 2 Comes from same piece a few feet further from vein opening -
x 3 Dth. #3 #2 #1

Pa Slag. Stretton Pa.
ap. 28/9/

Hard metal balls — 12 grams

Magnetic part 40 mesh - 9.500
Dia - " " - 149.000

12
9.500
149) 21.500 (14.42 % met.
600
640
440

Average of a
Barrel Slag -

6173

Mr. Edison's Direction May 6/91

Batchelor Ore Exp.

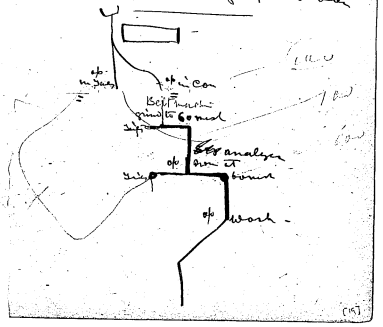
took 40 grain - ore 50 mesh
reduced =
Tails — 30 grain
Con — 10
or ~~[illegible]~~ Iron = 18.10

Now took 10 grains of the Con which was perfectly separated at 150 mesh the magnetic take up -
ground to 150 mesh = 65.16
washed this = 61.54

Mr. Edison Sec

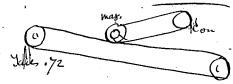
Rough Results of May 7/91
on Batchelor
30 Samples
Done by hand to minutate bar. separator
@ 20 mesh
Con — 35.4
Tails — 1.44

Satisfactory ~~[illegible]~~ on Batch ore 30 Samples
20 mesh strong point bar



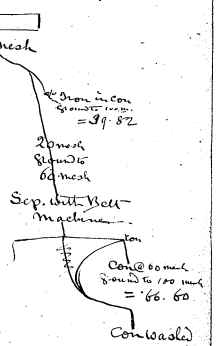
May 21/91

Test of Tailing Pick up
4th loss in Ogden Dump.



Used Dechtelsville Tails 2.89
Ran thro machine = .72 Tails

Batchelor Ore
Immiration of new plant.



Poor ore.
at 60 mesh sh^d = 70.

Sep. 11/91

Mallory Samples Experimented on as below a bottle sent to Messrs Clapper Hunt. phil. their results then mailed to Mallory

#1 A. 16	@	10 mesh	Con	17.55
" " "	"	" "	Tails	14.83
. . . . .		14	Con	16.77
. . . . .			Tails	15.18
. . .				
. . .		20	Con	14.95
			Tails	16.57
1 C. 46	@	10 mesh	Con	57.90
" " "	"	"	Tails	7.44
" " "	"	14 "	Con	57.37
. . . . .			Tails	7.73
. . . . .		20 "	C.	55.27
. . . . .			T.	9.44
4 A 23	. . .	10 mesh	C.	~~30.60~~
. . . . .			T.	9.83
. . . .		14	C.	29.22
. . . . .				10.22

4 A 23.	@ 20 hour =	C. 26.75
		J. 12.10
5 B. 59	— 10	C. 28.80
		J. 11.61
	14 hour =	C. 27.22
		J. 12.66
	20 hour =	C. 24.20
		J 15.
*1 D 80	10 hour =	C. 32.35
		J. 18.52
	14	C. 21.31
		J. 18.90
	20	C. 28.40
		J. 20.82
*1 B. 29	10 hour =	C. 30.[illegible]
		J. 24.[illegible]
	14	C. 29.[illegible]
		J. 21.[illegible]
	20	C. 26.[illegible]
		J. 23.6.

*4 A 45	— 10 hour =	C. 45.49
		J 5.50
	14	C. 44.16
		J. 5.87
	20.	C. 42.11
		J. 7.30
*1 A 23	— 20 hour =	C. 7.59
		J 7.60

0.1<..

Nov. 10/91.

Large Bag of ore from Mallory.
In special box on bar at Bell.

Magnetic assay made at 70 mesh.
~~Tails~~ Weight of Tails after Bar Sep. 27 lb. ½
" " Con " " " 75.

Bar :- Tails ——— 6.15
Con ——— 52.85

Crushed to 50 mesh & Sep. on Belt
Weight of Con after Sep. @ 50 mesh = 57.
" " Tails " " " " " " = 14.

Magnetic assay after 50 mesh stuff.
Con ——— ~~64.25~~ 66.96
Tails ——— .85

Chem. pitting analysis :- Sent to Mr W.S. Mallory

Rec'd Nov. 24/91

Exploited on Rec. 1st Mallory Ore - Michigan
* Trench -

Crude Ore - crushed to 100 mesh & assayed.
Net Iron - 24.34

Weight of Ore - before Sep. on Bar. . 5½ lbs.
" " Con after Sep. 36 lb. lbs
" " Tails " " 26½ "

Concent. of 10 mesh crushed & assayed at 100 mesh - = 36.14 %
Tails of 10 mesh crushed & assayed at 100 mesh - 9.87

Weight of 10 mesh con. after being crushed to 50. mesh 36 lbs.
Weight of Con. after Sep. on Bell-machine 19½
" " Tails " " " " 10½
Con. after Sepan. #1 net Iron. 11 lbs. 13 " 57.34 (100 mesh assay)
" " " 2 " " 13 " 55.41
" " " 3 " " 13 " 54.25
Tails after Sep. on Bell-Machine - 1.62

Notes from Ogden
sent by Edison Batchelor Dec. 11/9.

Sample one from Alex. Elliot property
Pa. Deposit - from the top of the
mountain 200 feet above the river
A schist - composed of separated
crystals of magnetite like those in
Talcose schist -
Test. 14.4 % mat. at 70 mesh - will
probably give 13. % @ 50 mesh - & not
more than 63 % concentrate -
At 100 mesh it gave 14.9 %
The Con. regound reduced it back
to 14.1 % - The schist is
that variety that looks like specular
iron ore - Very hard to crush on
account of close grain -

Batchelor

rec'd - 14 Dec 9.

Quartz Ore Feb 29th/92

Ore No 1 W. Sil. & phos. Considerable molybdenum most in ass

" " 2 W. " " " "

" " C 1 " " " "

" " C 2 " " " "

* of analysis 53 — 56
Feb. 23 — 26/92

(11)

Mar. 7/92

Morgan –

2 – heads Con. & B 200 & A 100 [illegible] 6.72

A [illegible]

B. Con taken & mag. roast separation Dry 100 mesh

assay B Mag. – 247 – 17.92

Dia. – 281 14.04

Con taken again. – roasted 100 mesh separ. wet Mag (Magnetic [illegible]) 100 mesh.

roasted C Mag. – 20.08

Dia – 8.76

Con taken again.

roasted 200 mesh – Wet

D Mag. – 13.76

Dia – 12.48

Ogden Mills

Apr. 2/92

Belt Machines –

#1 feed = $\frac{.54}{100}$ of a in.

2 " $\frac{.59}{100}$ " " "

3 " $\frac{.62}{100}$ " " "

5 machine old belt. –

#1 – slowest feed (for reg. run) – 70.59

2 – faster 70.72

3 – faster 69.58

" " " finishing = 5 – 69.50

" " " machine old belt

#3 – fastest feed for comparison 69.69

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15 Machine New Belt.

#1 – 70.77

2 – Ditto above – 70.77

3 – 70.95

16 machine Spun Belt –

#51 – for comparison higher speed 70.99

av. of all machines at 51 is.

During these Experiments – slow feed = 70.59

Angle Exp't on #15 –

reg. slow feed angle not changed 70.77

" " " " changed – 70.77

Exactly duplicate 70.95

1000
690
9350

10
9850

1000
690
9350

9650
724
3860
1930
6755
69560

A — Jan — Money
B — Com — 174
B — Jan — 14
— Com — 20
Jan — 5